## Intravenous Therapy: Preventing Catheter-Related Infections

<table>
<thead>
<tr>
<th>Purpose</th>
<th>The purpose of this procedure is to maximally reduce the risk of infection associated with indwelling intravenous (IV) catheters.</th>
</tr>
</thead>
</table>
| General Guidelines | 1. Provide in-service training for staff members responsible for IV catheter placement and maintenance.  
2. Staff who insert catheters will demonstrate knowledge regarding the indications for IV catheter use, proper procedures for the insertion and maintenance of IV catheters, and appropriate infection control measures to prevent IV catheter-related infections.  
3. Staff may only insert catheters for which they have adequate training and demonstrated skill.  
4. Personnel who have been trained and exhibit competency in the insertion and care of IV catheters will supervise trainees who perform catheter insertion. |
| Surveillance | 1. Assess catheter sites visually or by palpation through the intact dressing on a daily basis. If residents have any of the following symptoms, remove the dressing and thoroughly examine the catheter site:  
   a. Tenderness at the insertion site;  
   b. Fever without obvious source; or  
   c. Other signs and symptoms suggesting local or bloodstream infection (BSI).  
2. Thoroughly examine the catheter site with each routine dressing change.  
3. Encourage residents to report any changes in their catheter site or any new discomfort.  
4. If a catheter-related infection is suspected, notify the resident’s physician immediately.  
5. If an infusion-related infection is suspected, and after getting a physician’s order, obtain cultures from the suspected source of infection (e.g., catheter-skin junction, peripheral catheter, infusate, resident’s blood, administration set).  
6. The Infection Control Coordinator will document and retain infection rate statistics. |
| Hand Hygiene | 1. Observe proper hand hygiene procedures either by washing hands with conventional antiseptic-containing soap and water or with waterless alcohol-based gels or foams. Observe hand hygiene before and after palpating catheter-insertion sites, as well as before and after inserting, replacing, accessing, repairing, or dressing an IV catheter.  
2. Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained. |

*continues on next page*
### Aseptic Technique During Catheter Insertion and Care

1. Maintain aseptic technique during catheter insertion and care.
2. Wear clean or sterile gloves when inserting an IV catheter as required by the OSHA Bloodborne Pathogens Standard. Clean gloves are acceptable for the insertion of peripheral IV catheters. Sterile gloves should be worn for the insertion of arterial and central catheters.
3. Wear clean gloves when changing the dressing on a peripheral IV catheter. Wear sterile gloves when changing the dressing on a central catheter.
4. Use maximal sterile barrier precautions (e.g., cap, mask, sterile gown, sterile gloves, and large sterile drape) when inserting or assisting in the insertion of central venous catheters (CVCs) and peripherally inserted central catheters (PICCs).

Before insertion, prepare the site with an antiseptic. Two percent (2%) chlorhexidine tincture for skin antisepsis is preferred. Seventy percent (70%) alcohol is an acceptable means of skin antisepsis. Wipe the area with a circular motion for thirty (30) seconds and allow it to air dry.

### Catheter Site Dressing Regimens

1. Use sterile gauze or sterile transparent semi-permeable membrane (TSM) dressings to cover the catheter site. If the resident is diaphoretic, or if the site is bleeding or oozing, gauze dressing is preferred to TSM dressing.
2. Evaluate the catheter insertion site daily by palpation through the dressing to discern tenderness and by inspection if a transparent dressing is in use. Gauze and opaque dressings should not be removed if the resident has no signs of clinical infection. If the resident has local tenderness or other signs of possible catheter-related bloodstream infection, an opaque dressing should be removed and the site inspected visually.
3. Replace catheter dressing as per IV policy and/or Physician order.
4. Replace gauze dressings every 2 days and replace TSM dressings on short-term central venous catheter (CVC) sites every 3-7 days. Replace TSM dressings on peripheral sites at the time of site rotation.
5. Replace dressings on tunneled or implanted CVC devices no more than once per week until the site has healed.
6. Do not use topical antibiotic ointments or creams on insertion sites.

### Selection of IV Catheters

1. Select the catheter, insertion technique, and insertion site with the lowest risk for complications (infectious and noninfectious) for the anticipated type and duration of IV therapy, and the experience of the staff.
2. Use an upper extremity instead of a lower extremity for catheter insertion. Replace a catheter inserted in a lower extremity site to an upper extremity site as soon as possible.
3. Avoid the use of steel needles for the administration of vesicant medications or solutions. Vesicants are solutions that can cause tissue injury or destruction if they leak into surrounding tissue; for example, vasopressors, chemotherapy agents, and some electrolyte solutions.
4. Use a midline catheter or PICC when the duration of IV therapy will likely exceed 6 days.

*continues on next page*
Replacement of IV Catheters

1. Promptly obtain physician order for the removal of any peripheral IV catheter that is no longer essential.
2. Remove a peripheral venous catheter if the resident develops signs of phlebitis or infection, or if the catheter malfunctions.
3. Replace/rotate peripheral IV catheters at least every 72-96 hours to prevent phlebitis and subsequent infection. If sites for venous access are limited and no evidence of phlebitis or infection is present, peripheral venous catheters can be left in place for longer periods; however the resident and the insertion site should be closely monitored.
4. If a catheter is placed under emergency conditions, and aseptic technique cannot be ensured, replace the catheter as soon as possible (within approximately 48 hours.)
5. Do not routinely replace midline catheters, CVC or arterial catheters solely for the purpose of reducing the incidence of infection.

Replacement of Administration Sets, Needleless Systems and Parenteral Fluids

1. Replace administration sets, including secondary (piggy back) sets and add-on devices, at approximately 72-hour intervals, unless catheter-related infection is suspected or documented.
2. Replace tubing used to administer blood, blood products, or lipid emulsions (those combined with amino acids and glucose in a 3 in 1 admixture or infused separately) within 24 hours of initiating the infusion. If the solution contains only dextrose and amino acids, the administration set does not need to be replaced more frequently than every 72 hours.
3. Change needleless components at least as frequently as the administration set.
4. Change caps approximately every 72 hours or according to manufacturer’s recommendations.
5. Complete the infusion of lipid-containing solutions (e.g., 3 in 1 solutions) within 24 hours of hanging the solution.
6. Complete the infusion of lipid emulsions alone within 24 hours of hanging the emulsion. If volume considerations require more time, the infusion should be completed within 24 hours.
7. Complete the infusion of blood or other blood products within 4 hours of hanging the blood.

IV Injection Ports

1. Clean injection/access ports with 70% alcohol before accessing the system.
2. Only access the port with sterile devices.
3. Cap all stopcocks when not in use.

Preparation and Quality Control of IV Admixtures

1. Do not use any container of parenteral fluid that is visibly cloudy (turbid) or has leaks, cracks, or particulate matter or if the manufacturer’s expiration date has passed.
2. If any IV system is discarded because of suspected fluid contamination, the fluid should be cultured and the implicated bottle saved. If contamination is confirmed, notify the Infection Control Coordinator. The Infection Control Coordinator will report contamination that may be related to the manufacturing process to the local health department, Centers for Disease Control, and the U.S. Food and Drug Administration.
3. Use single-dose vials for parenteral additives or medications when practical. Do not combine leftover content of single-use vials for later use.
4. Refrigerate multi-dose vials after they are opened, if recommended by the manufacturer.
5. Cleanse the access diaphragm of multi-dose vials with 70% alcohol before inserting a device into the vial.
6. Use a sterile device to access a multi-dose vial and avoid contaminating the device or the access diaphragm before penetrating. Discard a multi-dose vial if sterility is compromised.

continues on next page
1. Use a central venous catheter (CVC) with the minimum number of lumens or ports essential for the management of the resident.
2. Designate one port exclusively for hyperalimentation when using a multi-lumen catheter to administer parenteral nutrition.

References

- MDS (RAPs) 12m, I3, O2, P1c
- See also Guidelines for the Prevention of Intravascular Catheter-Related Infection at: www.cdc.gov/ncidod/dhqp/gl_intravascular.html
- Survey Tag Numbers F328; F441
- Related Documents See Intravenous Therapy chapter
- Risk of Exposure Blood – Body Fluids – Infectious Diseases
- Procedure Revised

<table>
<thead>
<tr>
<th>Date</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Revision date: 7/17/2012